Streptococcal Pharyngitis: Update and Current Guidelines

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Disclosures

I have no disclosures

Clinical Practice Guideline for the Diagnosis and Management of Group A Streptococcal Pharyngitis: 2012 Update by the Infectious Diseases Society of America

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CID 2012:55;e 86-102

Case Presentation

- 20 year old previously healthy male
- Day 1
  - Onset of sore throat with fever
- Day 2
  - Evaluated in office—exudative pharyngitis with tender anterior cervical adenopathy, h/o fever and no cough (4/4 of Centor Criteria)
  - Azithromycin started (within 24 hours of onset of symptoms)

Diagnosis of Gp A Streptococcal Pharyngitis

- IDSA (Infectious Disease Society of America)
  - Rapid strep test in adults
- ACP (American College of Physicians) and the AAFP (American Academy of Family Practice)
  - Modified Centor Criteria

Modified Centor Criteria

Criteria	Points
Absence of cough	1
Swollen and tender anterior cervical nodes	1
Temperature > 100.4°F (38°C)	1
Tonsillar exudates or swelling	1
Age	
3 to 14 years	1
15 to 44 years	0
45 years and older	–1
Cumulative score:	_____

Score ≥4—> Rx empirically

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Case Presentation

- Day 3
  - PC—not better—still with sore throat and fever
  - Plan—continue azithromycin
- Day 5
  - Phone Call—not better
    - Diffuse myalgias, difficulty swallowing, pain on (R) side of neck
  - Plan--to finish Azithromycin; encourage fluids; ibuprofen for symptom relief; call if not better

Case Presentation

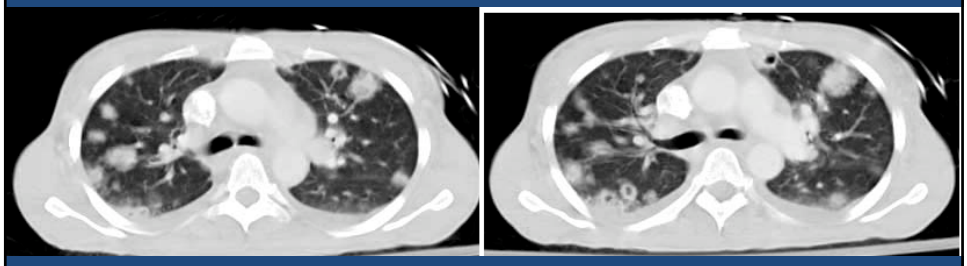
- Day 6
  - PC--SOB and pleuritic chest pain
  - Instructed to go to ED for evaluation

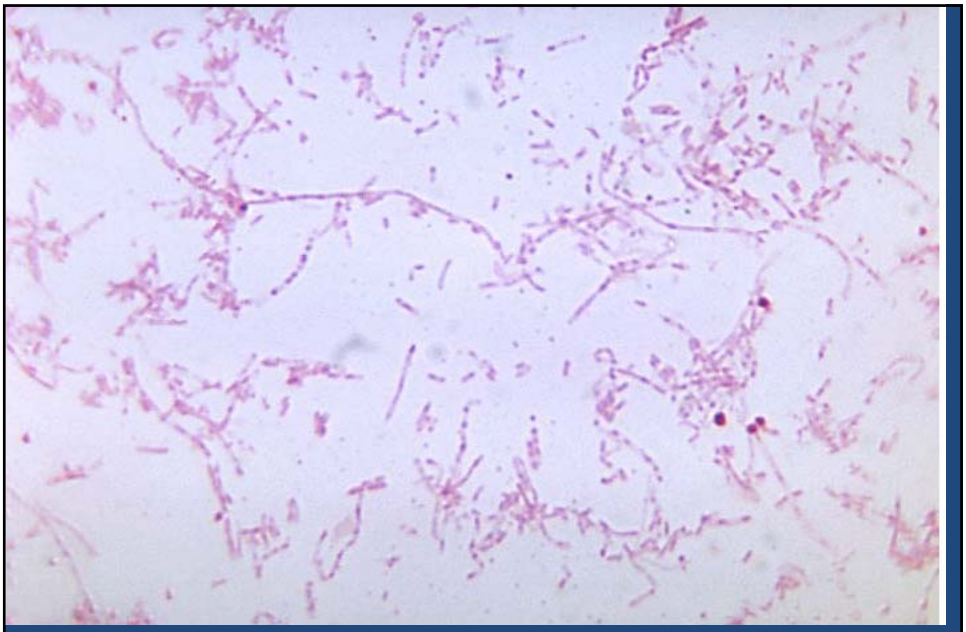
Case Presentation

- ED evaluation
  - BP 92/54
  - WBC—21,400 with 51% PMNs and 42% bands
  - Plts—16,000
  - BUN 80, Cr 4.2
  - PTT 50; FDP elevated
  - pH 7.29 with elevated lactic acid
  - CXR, chest CT and BCs obtained

Case Presentation--CXR

Case Presentation—Chest CT





Fusobacterium necrophorum

What Went Wrong?

- Natural History of GpA Streptococcal Pharyngitis
  - w/o therapy, symptoms better in 2-4 days
  - With early therapy (24 hours) symptoms resolve 24-36 hours sooner
- Viral Pharyngitis
  - Similar time line

PERSPECTIVE | Annals of Internal Medicine

Expand the Pharyngitis Paradigm for Adolescents and Young Adults

Robert M. Centor, MD

- Fusobacterium necrophorum
  - Anaerobic gram-negative rod
  - An important upper respiratory pathogen in ***ADOLESCENTS AND YOUNG ADULTS (ages 15-25)***
    - Can isolate F. necrophorum from 10% with sore throat
    - Peritonsillar abscesses—F. necrophorum isolated in 23% (most in pure culture) c/w gp A streptococcus—17%

PERSPECTIVE | Annals of Internal Medicine

Expand the Pharyngitis Paradigm for Adolescents and Young Adults

Robert M. Centor, MD

- Fusobacterium necrophorum
  - Complication—LEMIERRE'S SYNDROME
    - Septic phlebitis IJ vein, bacteremia,
    - septic pulmonary emboli/abscess
    - Estimated to occur in 1 of 400 cases of F. necrophorum pharyngitis (more common than Rheumatic Fever following gp A streptococcal pharyngitis)

Pharyngitis in Adolescents

- Fusobacterium necrophorum
  - Resistant to macrolides (azithromycin/clarithromycin)
  - Sensitive to penicillins, cephalosporins and clindamycin

Take Home Points

- Pharyngitis in the adolescent and young adults (ages 15-25) can be more complicated than previously thought
- Encourage Rapid Strep Testing
  - Antibiotic stewardship
  - Treat only if positive

Take Home Points

If you use the Centor Criteria:

- **AVOID MACROLIDES** for empirical therapy in pharyngitis in adolescents and young adults
  - F. necrophorum is resistant to macrolides
  - AND there is increasing resistance of Gp A strep to macrolides
- Penicillin, cephalosporins, clindamycin, Augmentin® are reasonable choices

- Remember the natural history:
  - If the patient fails to improve think about complications like Lemierre's

Table 3. Microbial Etiology of Acute Pharyngitis

Organisms	Clinical Syndrome(s)
Bacterial	
Group A streptococcus	Pharyngotonsillitis, scarlet fever
Group C and group G streptococcus	Pharyngotonsillitis
Arcanobacterium haemolyticum	Scarlatiniform rash, pharyngitis
Neisseria gonorrhoeae	Tonsillopharyngitis
Corynebacterium diphtheriae	Diphtheria
Mixed anaerobes	Vincent's angina
Fusobacterium necrophorum	Lemierre's syndrome, peritonsillar abscess
Francisella tularensis	Tularemia (oropharyngeal)
Yersinia pestis	Plague
Yersinia enterocolitica	Enterocolitis, pharyngitis
Viral	
Adenovirus	Pharyngoconjunctival fever
Herpes simplex virus 1 and 2	Gingivostomatitis
Coxsackievirus	Herpangina
Rhinovirus	Common cold
Coronavirus	Common cold
Influenza A and B	Influenza
Parainfluenza	Cold, croup
EBV	Infectious mononucleosis
Cytomegalovirus	CMV mononucleosis
HIV	Primary acute HIV Infection
Mycoplasma	
Mycoplasma pneumoniae	Pneumonitis, bronchitis
Chlamydia	
Chlamydophila pneumoniae	Bronchitis, pneumonia
Chlamydophila psittaci	Psittacosis

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Viral	
Adenovirus	Pharyngoconjunctival fever
Herpes simplex virus 1 and 2	Gingivostomatitis
Coxsackievirus	Herpangina
Rhinovirus	Common cold
Coronavirus	Common cold
Influenza A and B	Influenza
Parainfluenza	Cold, croup
EBV	Infectious mononucleosis
Cytomegalovirus	CMV mononucleosis
HIV	Primary acute HIV Infection
Mycoplasma	
Mycoplasma pneumoniae	Pneumonitis, bronchitis
Chlamydia	
Chlamydophila pneumoniae	Bronchitis, pneumonia
Chlamydophila psittaci	Psittacosis

With rare exceptions, antibiotics have no proven benefit as treatment for acute pharyngitis due to organisms other than GAS.

This includes Gp C and G strep

GAS As Cause of Pharyngitis

- Predominantly a disease of children 5-15 years of age—20% - 30%
  - Diagnosis by RADT (sensitivity ≈ 70% - 90%)
  - If negative —> culture (sensitivity ≈ 90 – 95%)

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  - Diagnosis by RADT (sensitivity ≈ 70% - 90%)
  - If negative —> culture (sensitivity ≈ 90 – 95%)
- In adults accounts for 5% - 15%
  - Diagnosis by RADT
  - No backup test needed in most cases

GAS in Children < 3 Years Old

- Presentation atypical
  - fever, purulent rhinitis, excoriated nares, diffuse adenopathy
  - Exudative pharyngitis uncommon
- Rheumatic fever uncommon
  - Requires multiple antigenic exposures
- Diagnostic testing only in high risk settings
  - Household disease
  - Day care setting

Therapy of GAS

Table 2. Antibiotic Regimens Recommended for Group A Streptococcal Pharyngitis

Drug, Route	Dose or Dosage	Duration or Quantity	Recommendation Strength, Quality[a]	Reference(s)
For individuals without penicillin allergy				
Penicillin V, oral	Children: 250 mg twice daily or 3 times daily; adolescents and adults: 250 mg 4 times daily or 500 mg twice daily	10 d	Strong, high	[125, 126]
Amoxicillin, oral	50 mg/kg once daily (max = 1000 mg); alternate: 25 mg/kg (max = 500 mg) twice daily	10 d	Strong, high	[88–92]
Benzathine penicillin G, intramuscular	<27 kg: 600 000 U; ≥27 kg: 1 200 000 U	1 dose	Strong, high	[53, 125, 127]
For individuals with penicillin allergy				
Cephalexin,[b] oral	20 mg/kg/dose twice daily (max = 500 mg/dose)	10 d	Strong, high	[128–131]
Cefadroxil,[b] oral	30 mg/kg once daily (max = 1 g)	10 d	Strong, high	[132]
Clindamycin, oral	7 mg/kg/dose 3 times daily (max = 300 mg/dose)	10 d	Strong, moderate	[133]
Azithromycin,[c] oral	12 mg/kg once daily (max = 500 mg)	5 d	Strong, moderate	[97]
Clarithromycin,[c] oral	7.5 mg/kg/dose twice daily (max = 250 mg/dose)	10 d	Strong, moderate	[134]

Comments on Therapy

- Penicillin DOC—safety and efficacy, narrow spectrum and cost
- Amoxicillin often used in children primarily because of the taste of the suspension
- Some cephalosporins (cefdinir and cefpodoxime) have been approved for 5 days of therapy—would discourage because of broad spectrum
- Clindamycin resistance ≈ 1%—> good for patients with IgE mediated reactions to penicillin
- Azithromycin resistance in the US ≈ 5% - 10%

Post-Treatment Cultures

- Even with effective therapy and resolution of symptoms, 7% - 37% of children have positive post-treatment cultures
- Because it is common and rarely is clinically significant

POST TREATMENT CULTURES NOT INDICATED

Recurrent Pharyngitis

- Noncompliance with initial therapy
- New infection
- Viral infection in patient who is a chronic carrier
  - Up to 20 % of children can be carriers
    - Unlikely to spread the organism
    - Low risk of Rheumatic fever or suppurative complications
    - Difficult to eradicate carrier state
  - No need to treat asymptomatic carriers★★

Household Contacts of GAS

- In studies examining the role of antibiotic prophylaxis of household contacts of patients with GAS, penicillin prophylaxis has not been shown to reduce the incidence of secondary cases

Pediatr Infect Dis J 2007; 26:139–41.

Appendix

When to Treat Asymptomatic Carriers

- Community outbreaks of rheumatic fever, post-streptococcal glomerulonephritis or invasive Gp A infections
- Outbreak of Gp A strep in a closed community
- In the presence of a family or personal history of rheumatic fever
- If suspect “ping-pong” spread in a household with multiple recurrent episodes of infection

Table 5. Treatment Regimens for Chronic Carriers of Group A Streptococci

Route, Drug	Dose or Dosage	Duration or Quantity	Recommendation Strength, Quality[a]	Reference
Oral				
Clindamycin	20–30 mg/kg/d in 3 doses (max = 300 mg/dose)	10 d	Strong, high	[119]
Penicillin and rifampin	Penicillin V: 50 mg/kg/d in 4 doses × 10 d (max = 2000 mg/d); rifampin: 20 mg/kg/d in 1 dose × last 4 d of treatment (max = 600 mg/d)	10 d	Strong, high	[118]
Amoxicillin–clavulanic acid	40 mg amoxicillin/kg/d in 3 doses (max = 2000 mg amoxicillin/d)	10 d	Strong, moderate	[120]
Intramuscular and oral				
Benzathine penicillin G (intramuscular) plus rifampin (oral)	Benzathine penicillin G: 600 000 U for <27 kg and 1 200 000 U for ≥27 kg; rifampin: 20 mg/kg/d in 2 doses (max = 600 mg/d)	Benzathine penicillin G: 1 dose; rifampin: 4 d	Strong, high	[81]

Tonsillectomy for GAS

- Tonsillectomy may be considered in the rare patient whose symptomatic episodes do not diminish in frequency over time and for whom no alternative explanation for recurrent GAS pharyngitis is evident. However, tonsillectomy has been demonstrated to be beneficial only for a relatively small group of these patients, and any benefit can be expected to be relatively short-lived